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E2A

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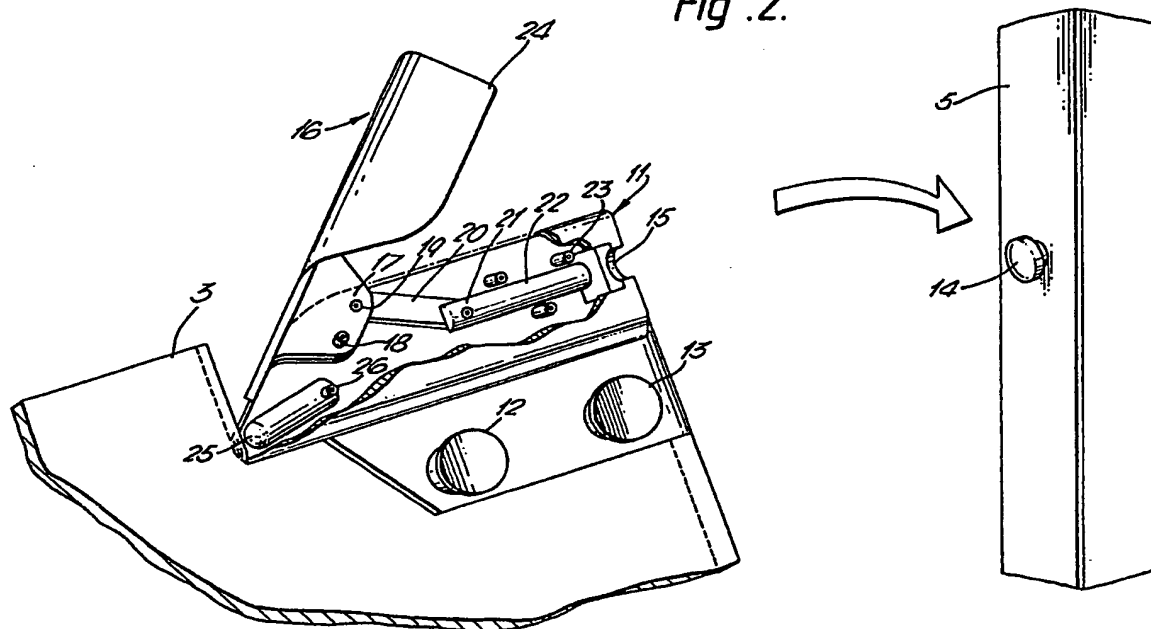
(57) A releasable fastening, for use with fold-down furniture, for holding two sections of the furniture 3, 5 in abutting relation comprises a bolt section 11, incorporating a sliding bolt 22, on one section of the furniture 3 and a headed pin 14, engageable by a recess 15 in the bolt section 11, rigidly attached to the second section 5 of the furniture.

The bolt 22 is moved by the action of closing a pivoted cover 16 which pushes the end of the bolt 22 onto the pin head 14.

The fastening is operated by moving the two sections 3, 5 of the furniture into position so that the head of the pin 14 is located within the recess 15 in the bolt section 11 and closing the cover 16 which moves the bolt 22 against the pin head 14 to lock the pin 14 and the section 11 together.

The catch can also incorporate a gravity operated safety lock 25 to prevent accidental release of the fastening.

Fig .2.



The drawings originally filed were informal and the print here reproduced is taken from a later filed formal copy.

GB 2 153 424 A

Fig. 1a.

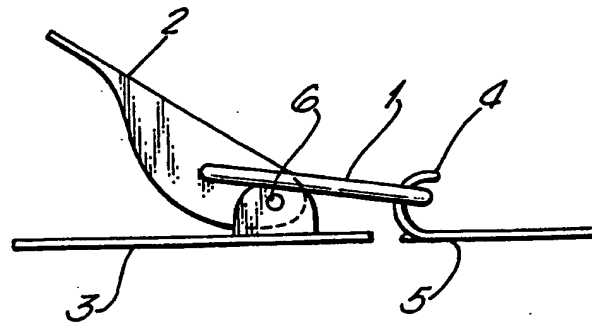


Fig. 1b.

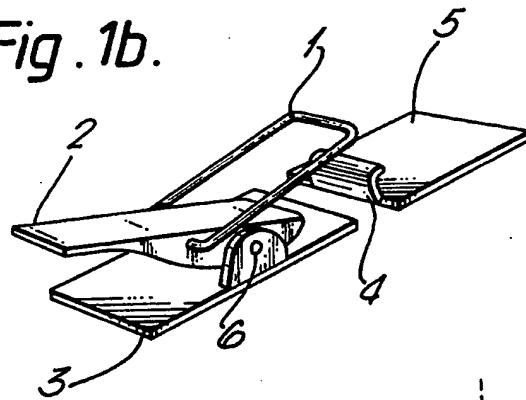


Fig. 1c.

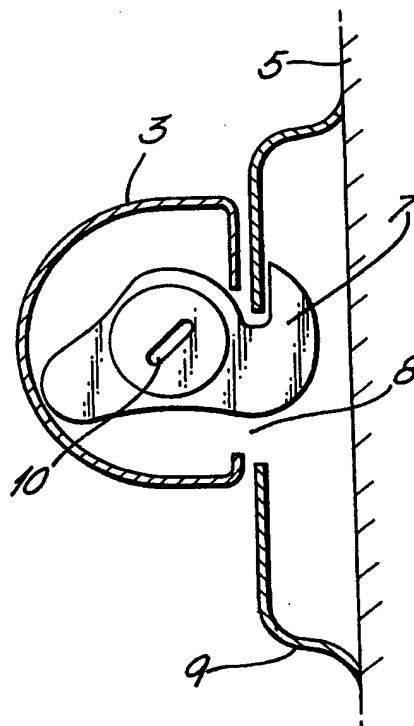


Fig. 2.

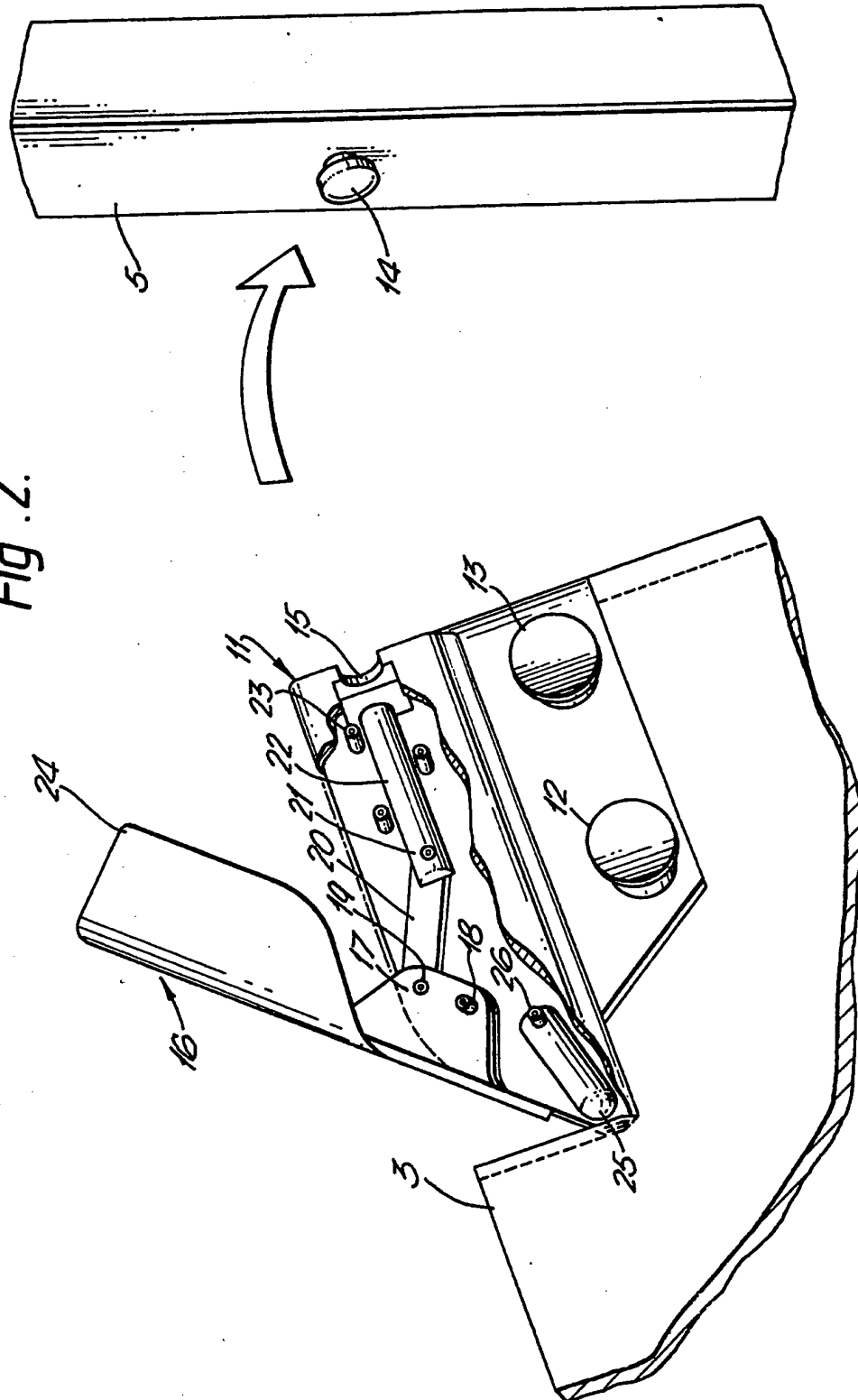
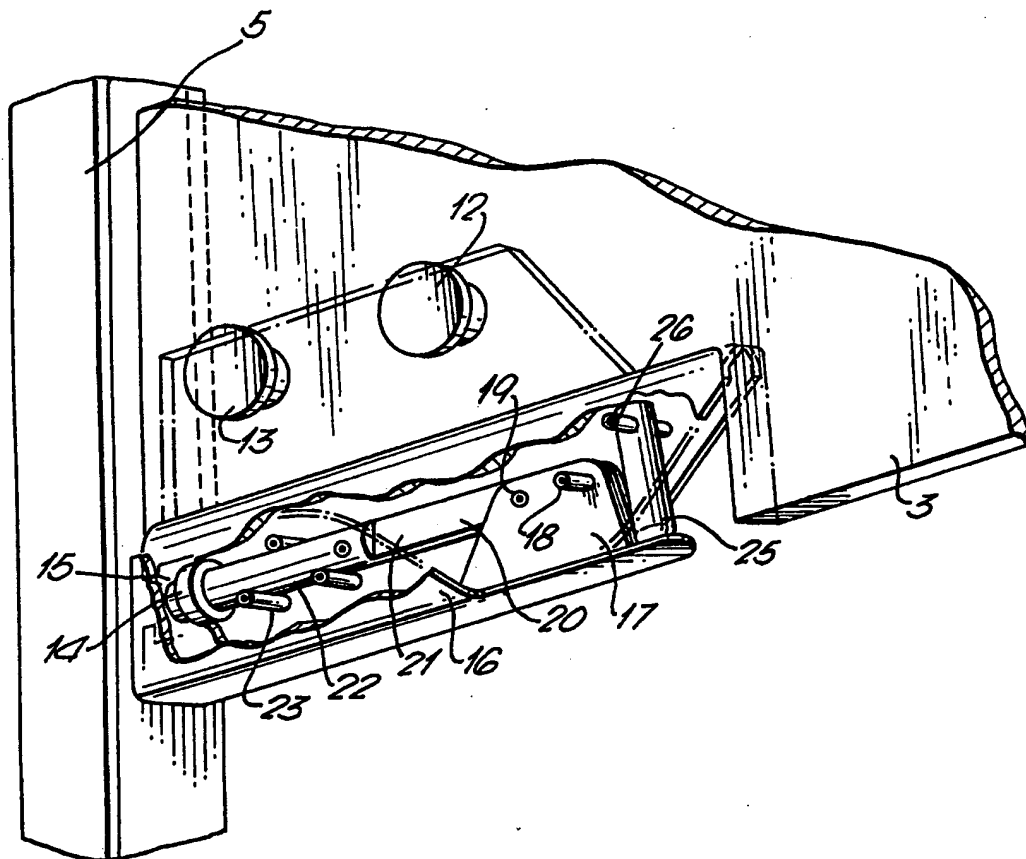


Fig. 3.

SPECIFICATION

Improvements in or relating to releasable catches for use with fold-down furniture

The invention relates to releasable catches, particularly though not exclusively for use with fold-down furniture.

Many types of modern furniture, particularly office furniture, are required to be of fold-down or knock-down variety so that they can be folded away or taken apart and transported in flat, convenient packages.

A simple, fold-down structure is the most convenient: furniture can easily be transported from factory to user and assembled quickly and easily; also the furniture can be folded down, moved from place to place and reassembled without difficulty. Once the furniture structure is assembled catches are required to hold the sections in position. These catches must be strong enough to enable the assembled structure to withstand any knocks and vibrations it may receive in use without any risk of the catches loosening so that the structure could wobble, or becoming unfastened so that the furniture would be in danger of collapsing.

There are several alternative catch devices available for holding the sections of folding furniture together in their assembled positions. The most common are a toggle catch and a cam action catch. The toggle catch comprises a loop clip attached to one section of the furniture and a hook attached to a second section. The loop clip is fastened over the hook and pulled back to hold the two sections tight together. This type of catch is often seen on suitcases and is used on fold-down furniture. However, as it protrudes from the edge of the section to which it is attached, it is vulnerable to knocks which may damage it or even cause it to open, and it can catch something such as wire which is moved past it, again possibly opening the catch or causing damage to the item caught. Thus the catch can easily be opened, inadvertently or otherwise. Another disadvantage is that the catch is only strong in the direction that the loop clip pulls against the hook. In the lateral and vertical directions the catch may be unacceptably weak for many of the stresses the furniture may be subjected to.

An alternative catch is the cam action type which comprises a hook turned by a screwdriver into a hole. These catches do not protrude from the edge of the furniture section and so are less vulnerable than the toggle catches. However, the vibrations of the furniture in use can cause them to work loose, allowing the furniture to wobble. Eventually the catch may even open completely. Also these catches may be unacceptably weak in one or more directions, causing them to break if subjected to certain stresses. Additionally tools are required for them to be assembled.

The object of this invention is to provide a catch that is strong enough to withstand all the strains that furniture is subjected to, according to the British Standards strength tests for furniture; that does not protrude from the edge of the section to which it is attached; and that is not easily undone when the

furniture is in use but enables the furniture to be assembled and folded-down quickly and easily.

The invention provides a catch for holding two items in abutting relation comprising a clip section, which incorporates a ram system, attached to one item and a second section engageable by the clip section attached to the second item wherein the ram can be forced against the second section so that the two items are held together.

Preferably the second section comprises a headed pin, rigidly attachable to the second item, and the ram acts on the pin head.

Advantageously the two items may be sections of an item of fold-down or knock-down furniture.

Preferably the operation of the catch involves:

a. moving the two items into position so that the head of the pin is located within a recess in the clip section; and

b. moving the ram against the pin head to lock the pin and the clip section together.

Preferably the ram is moved by the action of closing a clip cover. Preferably the movement is created by the clip cover rotating about a pivot and causing the end of the ram attached to the clip cover to be pushed forward.

Advantageously the clip section includes a notch or recess which fits round the pin head locating the pin against the clip section.

Preferably the clip cover acts, additionally to the ram, as an extra means of preventing any movement of the clip section relative to the pin.

Advantageously the catch incorporates a safety lock to prevent accidental operation of the catch. Preferably the safety lock is a gravity catch incorporated in the clip section which enables the catch to be operated when the furniture is in the assembly position, usually upside down, but comes into operation when the furniture is turned the right way up to prevent the catch from being opened.

Preferably the gravity catch comprises a bar which can rotate about a pivot point. Thus when the catch is used for furniture assembly, for example, the action of turning the furniture the right way up from the assembly position allows the bar to pivot into a down-position which stops the clip cover being opened and hence prevents the ram being released. Turning the furniture into the assembly position again allows the bar to pivot back to its original position, thus enabling the clip cover to be opened.

Conveniently the ram is guided onto the pin head by guide pins or rollers which allow the arm to slide or roll into position.

Conveniently the clip section assembly is fixed into a shaped groove in a section of the first item. Conveniently the section may be a panel section of an item of furniture and the clip section assembly may be held in place by barbed location dowels of metal or plastics material, screws or other convenient means.

Advantageously the panel section may be a modesty panel, side panel or cross-rail of a table or desk. The pin is then conveniently attached to a leg section. The pin may be attached by gluing, welding or any other convenient means.

The clip section may be made by sheet formation or moulding in metal or plastics material or a combination of both. Conveniently the clip section is made to the same thickness as the panel and the clip cover can be finished to blend in with the panel finish so that the catch is as unobtrusive as possible.

Conveniently a fold-down desk fitted with catches of the type of the invention would be assembled by:

1. raising the hinged legs;
2. raising the panel;
3. ensuring the clip section and the pin are located correctly;
4. closing the clip cover; and
5. turning the desk to the upright position.

In order that the invention may be more fully understood, one embodiment thereof will now be described, by way of example only, with reference to the accompanying drawings of which:

Figures 1 a, b and c show two prior art systems available;

Figure 2 is a perspective view, cut away, of the catch according to the present invention before assembly of the furniture;

Figure 3 is a perspective view, cut away, of the catch with the furniture in its assembled position.

Referring to Figure 1, two of the available prior art catches are shown. Figures 1a and 1b show a toggle catch from the side and in perspective respectively and Figure 1c shows a cam action catch in section.

The toggle catch operates by the action of a catch loop 1 attached to a clip 2 on an attachment plate 3 which is placed over a hook 4 on a second attachment plate 5. The clip 2 is pressed down and as it rotates about a pivot point 6 the catch loop 1 is pulled onto the hook 4, pulling the attachment plates 3 and 5 together.

The cam action in Figure 1c acts by the turning of a hook catch 7 into a hole 8 in a plate 9. The hook catch 7 is attached to a section 3 of an item of furniture and is turned by a screwdriver (not shown) inserted into a slot 10. The hook catch 7 grips the plate 9 which is attached to a second section 5 of the item of furniture, thus pulling section 3 and section 5 together.

Referring to Figure 2 the catch of the invention is shown with part of the side cut away to show the internal mechanism of the catch. A clip section assembly 11 is attached to a panel section 3 of an item of furniture using barbed dowels 12 and 13. The panel section 3 is raised towards a leg section 5 of the item of furniture. Attached to the leg section 5 is a pin 14 which is engaged by a notch 15 in the clip section 11. When the notch 15 has engaged the pin 14 a clip cover 16 is closed. The action of closing the clip cover 16 causes a plate 17 to rotate about a pivot 18. Also attached to the plate 17 is one end 19 of a bar 20. As the plate 17 rotates, the end 19 of the bar 20 moves on the arc of a circle centred at the pivot 18. This moves the other end 21 of the bar 20 forward. The end 21 is attached to a ram 22. As the end 21 of the bar 20 moves forward the ram 22 is pushed forward towards the pin 14 which is fitted in the notch 15. The ram 22 is guided onto the pin 14 by roller pins 23. The sections 3 and 5 are held together by the force of the ram 22 on the pin 14.

When the clip cover 16 is closed, its side panel 24 protects the ram 22 from damage and prevents any sideways movement of the ram 22 relative to the pin 14. A gravity catch 25 is attached to a pivot point 26 and lies in a position which enables the clip cover to be opened and closed.

Referring to Figure 3 the catch is shown with the furniture in the assembled position with the side panel 24 of the clip cover 16 cut away. The clip cover 16 is closed and the bar 20 is pushed fully forward, pushing the ram 22 onto the pin 14 which is engaged in the notch 15. The gravity catch 25 rotates about the pivot 26 into a down-position which prevents the clip cover 16 from being opened.

It will be obvious that the catch of the invention is not limited to use on fold-down furniture but can also be used to join sections of knock-down furniture. It can be used on any furniture and for many other items where two sections have to be attached at right-angles to each other. It can be attached to the end of a section or set within the body of a section along its side.

The catch of the invention has many advantages over the prior art catches in that: it can be used on a wide variety of furniture; it is strong in all directions; it requires no tools for assembly of the furniture; it enables furniture to be assembled and taken down quickly and easily; once the furniture is in the assembled position the catch cannot be opened and knocks or vibrations will not cause it to work loose; and it does not protrude from the furniture section edge so it cannot be caught and it blends in with the furniture allowing an aesthetically pleasing finish to be given to the furniture.

100 CLAIMS

1. A catch for holding two items in abutting relation comprising:

- a. a clip section, which incorporates a ram system, attached to one item; and
- b. a second section engageable by the clip section attached to the second item, wherein the ram can be forced against the second section so that the two items are held together.

2. A catch according to claim 1 wherein the second section comprises a headed pin, rigidly attachable to the second item, and wherein the ram acts on the pin head.

3. A catch according to claim 1 or claim 2 wherein the ram is moveable by the action of closing a clip cover.

4. A catch according to claim 3 wherein the clip cover is attached to the ram and is rotatable about a pivot to thereby push the ram forward.

5. A catch according to any one of claims 2 to 4 wherein the clip cover acts as an extra means of preventing any movement of the clip section relative to the pin.

6. A catch according to any one of the preceding claims wherein the catch incorporates a safety lock to prevent accidental operation of the catch.

7. A catch according to claim 6 wherein the safety lock comprises a gravity catch.

8. A catch according to claim 7 wherein the gravity catch comprises a bar which can rotate about a pivot

point to stop the clip being opened and prevent the rain being released.

9. A catch according to any one of claims 2 to 8 wherein the ram is guided onto the pin head by
 5 guide pins or rollers which allow the ram to slide or roll into position.
10. A catch according to any one of the preceding claims wherein the clip section is so shaped as to fit into a complementary groove in a section of the first
 10 item.
11. A catch according to any one of the preceding claims wherein the first item is a panel section of an item of furniture.
12. A catch according to claim 11 wherein the
 15 panel section is a modesty panel, a side panel or a cross rail of a table or desk.
13. A catch according to any one of the preceding claims wherein the second item is a leg section of an item of furniture.
- 20 14. A catch substantially as herein described with reference to Figures 2 and 3 of the accompanying drawings.
- Amendments to the claims have been filed, and have the following effect:—
- 25 (a) Claims 1-5, 8, and 10-13 above have been deleted or textually amended.
- (b) Claims 6, 7, 9 and 14 above have been re-numbered as 2, 3, 5 and 9 and their appendancies corrected.
- 30 (c) New or textually amended claims have been

filed as follows:—

1. A catch for holding two items in abutting relation, comprising two parts each adapted for rigid attachment to a respective item, in which
 35 the first part comprises a housing containing a ram moveable forwards by the rotation of a cover for the housing into the closed position, and the second part comprises a headed pin engageable with a slot in the forward end of the said
 40 housing when the two items are in the desired abutting position,
- whereby when the pin is engaged in the said slot the closing of the said cover urges the ram forwards against the pin head and the cover itself when in the closed position prevents movement of the pin in a
 45 transverse direction relative to the ram.
4. A catch according to claim 3 wherein the gravity catch comprises a bar which can rotate about a pivot point and prevent the housing cover being opened to release the ram.
- 50 6. A catch according to any one of the preceding claims wherein the housing is so shaped as to fit into a complementary groove in a section of one of the said items.
- 55 7. A catch according to any one of the preceding claims wherein one of the said items is a panel section of a piece of furniture.
8. A catch according to any one of the preceding claims wherein one of the said items is a leg section
 60 of a piece of furniture.